

**Site Investigation
Final
Site-Specific Field Sampling Plan Attachment
for Stump Dump, Parcel 82(7)**

**Fort McClellan
Calhoun County, Alabama**

Prepared for:

**U.S. Army Corps of Engineers, Mobile District
109 St. Joseph Street,
Mobile, Alabama 36602**

Prepared by:

**IT Corporation
312 Directors Drive
Knoxville, Tennessee 37923**

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List of Acronyms

ADEM	Alabama Department of Environmental Management
CLP	Contract Laboratory Program
CERFA	Community Environmental Response Facilitation Act
CESAS	Corps of Engineers South Atlantic Savannah
COPC	contaminant of potential concern
CSEM	conceptual site exposure model
DOD	U.S. Department of Defense
DQO	data quality objective
EBS	environmental baseline survey
EPA	U.S. Environmental Protection Agency
ESE	Environmental Sciences and Engineering
GPS	global positional system
FTMC	Fort McClellan
IDW	investigation-derived waste
IT	IT Corporation
NAD83	1983 North American Datum
NGVD	National Geodetic Vertical Datum
PID	photoionization detector
PSSC	potential site-specific chemical
QA/QC	quality assurance/quality control
QAP	installation-wide quality assurance plan
SAP	installation-wide sampling and analysis plan
SFSP	site-specific field sampling plan
SHP	installation-wide safety and health plan
SSHP	site-specific safety and health plan
SI	site investigation
SVOC	semivolatile organic compound
TAL	target analyte list
TCL	target compound list
TOC	total organic carbon
USACE	U.S. Army Corps of Engineers
UXO	unexploded ordnance
VOC	volatile organic compound
WP	installation-wide work plan

Executive Summary

This site-specific field sampling plan attachment to the installation-wide sampling and analysis plan (SAP) (IT Corporation [IT], 1998a) for the Stump Dump at Fort McClellan, Calhoun County, Alabama, will be used in conjunction with the site-specific safety and health plan (SSHP), and the installation-wide work plan (IT, 1998b), the habitat-specific screening ecological risk assessment work plan, and the SAP. The SAP includes the installation-wide safety and health plan, the waste management plan, and installation-wide quality assurance plan. Site-specific hazard analyses are included in the SSHP.

The Stump Dump is located due east of the Main Post. The area of the Stump Dump covers approximately 26 acres. The Stump Dump is now inactive but was used as a disposal site between 1985 and 1988.

The Stump Dump, Parcel 82(7) falls within the "Possible Explosive Ordnance Impact Area" shown on Plate 10 of the FTMC Archive Search Report, Maps (USACE, 1998a). Therefore, IT will conduct unexploded ordnance (UXO) avoidance activities, including surface sweeps and downhole surveys of soil borings.

Specifically, IT will collect eight surface soil samples, eight subsurface soil samples, eight groundwater samples, six surface water samples, six sediment samples and five depositional soil samples at this site. Potential contaminant sources at the Stump Dump, include petroleum products (e.g., gasoline, diesel, heating oil, waste oil, and lubricants), solvents, and metals. Chemical analyses of the samples collected during the field program will include volatile organic compounds (VOC), semivolatile organic compounds (SVOC), pesticides, herbicides, and metals. Additionally, sediment samples will be analyzed for total organic carbon and grain size. Results from these analyses will be compared with site-specific screening levels specified in the installation-wide work plan (WP) and regulatory agency guidelines.

1.0 Project Description

1.1 Introduction

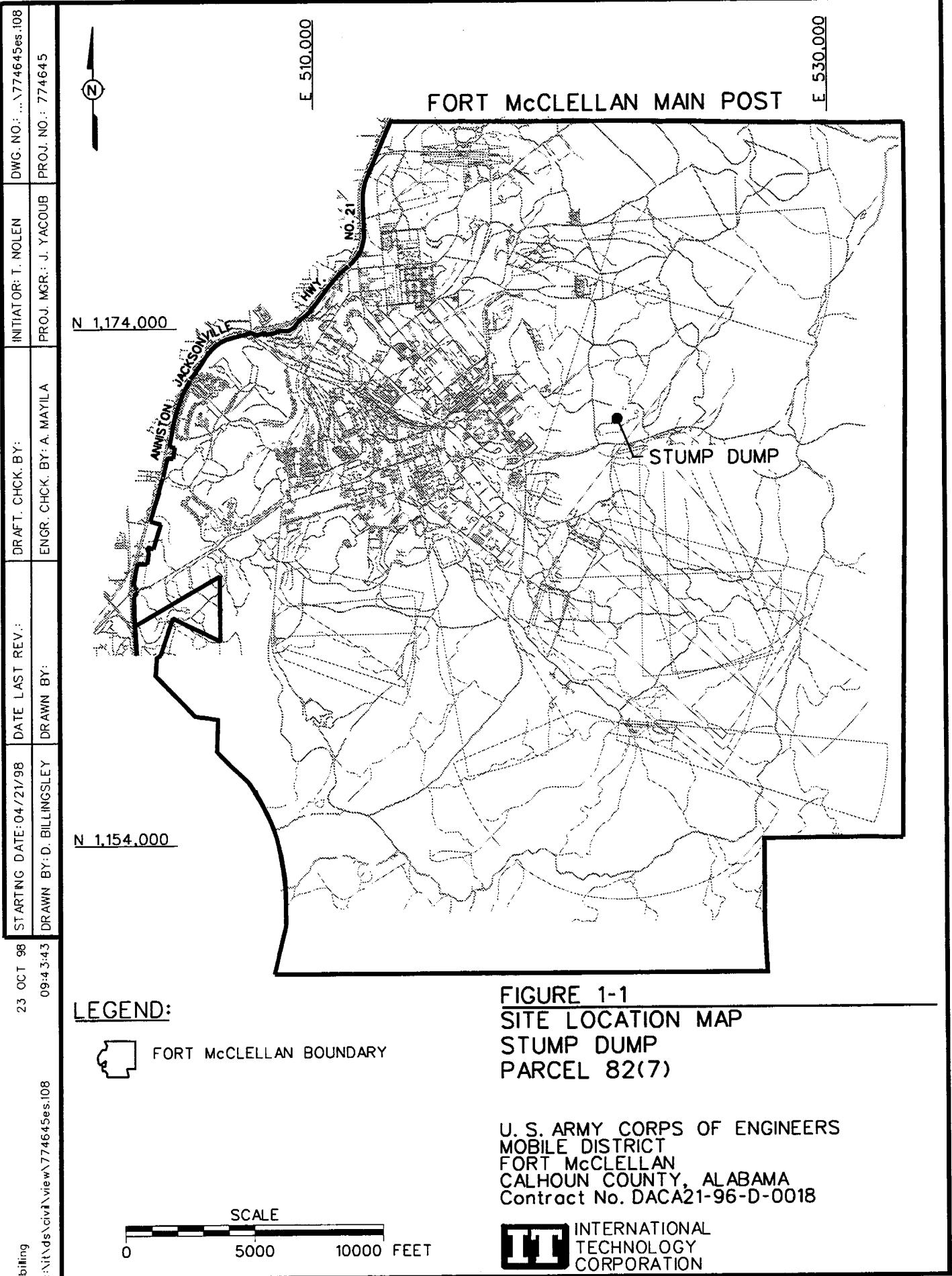
The U.S. Army is conducting studies of the environmental impact of suspected contaminants at Fort McClellan (FTMC) in Calhoun County, Alabama, under the management of the U.S. Army Corps of Engineers (USACE)-Mobile District. The USACE has contracted IT Corporation (IT) to provide environmental services for the site investigation (SI) of the Stump Dump, under Delivery Order CK005, Contract No. DACA21-96-D-0018.

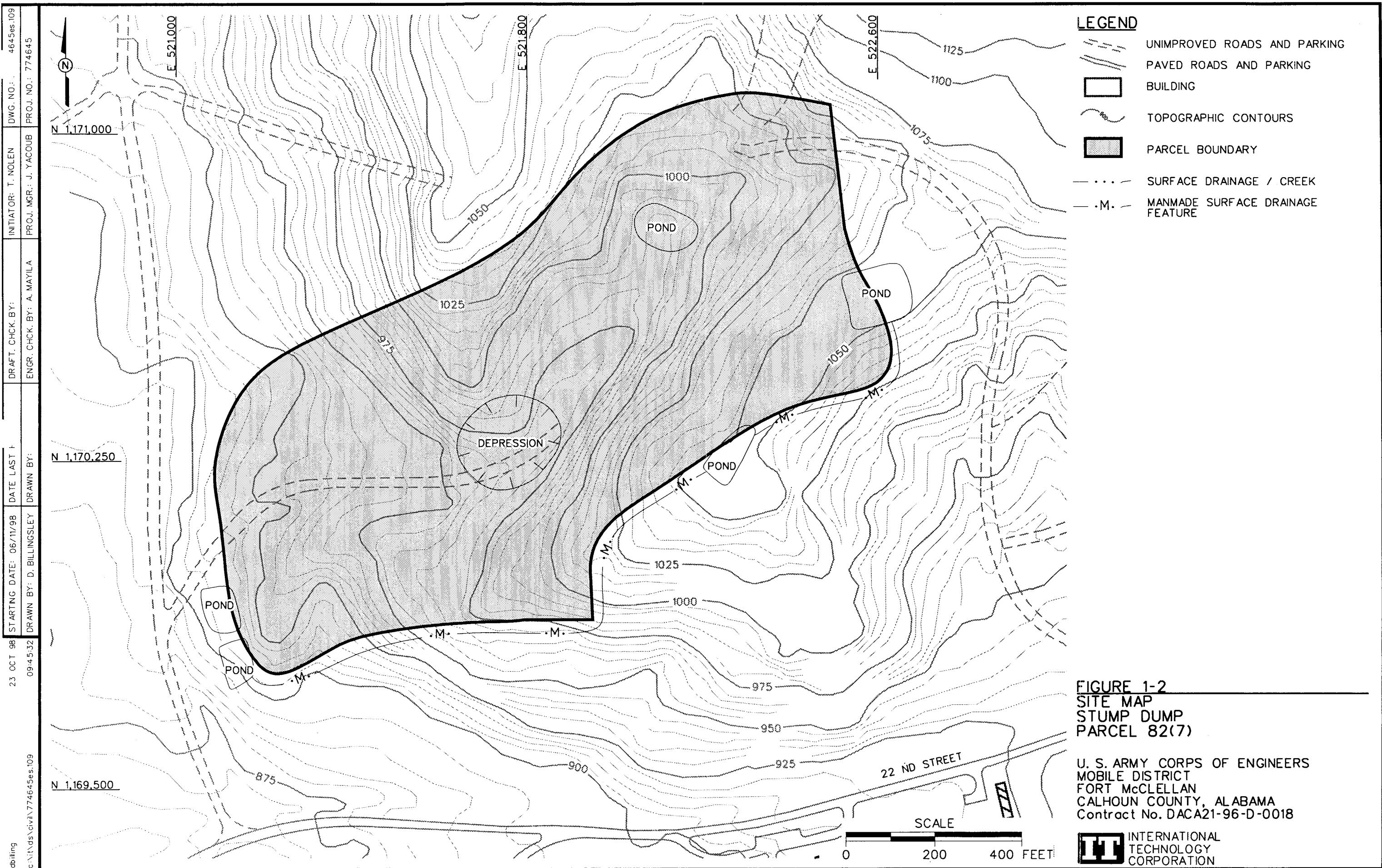
This site-specific field sampling plan (SFSP) attachment to the installation-wide sampling and analysis plan (SAP) (IT, 1998a) for FTMC has been prepared to provide technical guidance for sample collection and analysis at the Stump Dump (Figure 1-1). The SFSP will be used in conjunction with the site-specific safety and health plan (SSHP) developed for the Stump Dump site, and the installation-wide work plan (WP) (IT, 1998b), the habitat-specific screening ecological risk assessment work plan, and SAP. The SAP includes the installation-wide safety and health plan (SHP), waste management plan, and installation-wide quality assurance plan (QAP).

1.2 Site Description

The Stump Dump is located on the southwest facing slope due east of the central part of Main Post (Figure 1-1). The Stump Dump site is an open area covered with soil and low vegetation (grass, shrubs). The main access road to the site is restricted by a locked gate. The area around the site is mostly undeveloped or wooded. There are no streams on or very near the site, although several borrow pits and leachate/drainage control ponds exist on and around the site. Although the boundaries of the site are irregular, the Stump Dump is approximately 3,400 feet long (southeast to northwest) and over 1,650 feet in width (northeast to southwest). Shallow groundwater at the site is probably controlled by surface drainage and/or topography. Site elevation ranges from approximately 910 to 1,055 feet above sea level as established by the National Geodetic Vertical Datum (NGVD). Figure 1-2 is a site map which shows topographic features and site boundaries.

The soil type in the area of the Stump Dump is Stony Rough Land, sandstone (Ss). This miscellaneous land type consists of rough mountainous areas with many outcrops of sandstone and quartzite bedrock, loose rock fragments, and scattered patches of sandy soil material. It also includes rock escarpments on higher parts of the Choccolocco and Coldwater Mountains where quartzite of the Weisner formation is common. Slopes generally are more than 25 percent.





The soil material is generally shallow over bedrock. Runoff is high, infiltration is slow, and the capacity for available moisture is low. This land type is low in natural fertility.

The chief native vegetation for undeveloped areas of this land type is scrub oak, hickory, pine, and shrubs. The cover on escarpments is sparse and stunted. Most of this land type is difficult to reach, even for the harvest of timber (United States Department of Agriculture, Soil Survey, 1961).

1.3 Scope of Work

The scope of work for activities associated with the SI at the Stump Dump, as specified in the statement of work (U.S. Army Corps of Engineers [USACE], 1998b), includes the following tasks:

- Develop the SFSP attachment.
- Develop the SSHP attachment.
- Conduct a surface and near surface unexploded ordnance (UXO) survey over all areas to be included in the sampling effort.
- Provide downhole UXO support for all intrusive drilling activity to determine downhole hazards.
- Collect eight surface soil, eight subsurface soil, eight groundwater, six surface water, six sediment, and five depositional soil samples to determine whether potential site-specific chemicals (PSSC) are present at the Stump Dump and provide data to determine future planned corrective measures and closure activities.

Upon completion of the field activities and sample analyses, draft and final summary reports will be prepared in accordance with current U.S. Environmental Protection Agency (EPA) Region IV and the Alabama Department of Environmental Management (ADEM) requirements.

2.0 Summary of Existing Environmental Studies

Environmental Science and Engineering, Inc. (ESE) conducted an environmental baseline survey (EBS) to document current environmental conditions of all FTMC property (ESE, 1998). The study identified sites that, based on available information, have no history of contamination and comply with U.S. Department of Defense (DOD) guidance on fast track cleanup at closing installations. The EBS also provides a baseline picture of FTMC properties by identifying and categorizing the properties by seven criteria.

1. Areas where no storage, release, or disposal (including migration) has occurred.
2. Areas where only storage has occurred.
3. Areas of contamination below action levels.
4. Areas where all necessary remedial actions have been taken.
5. Areas of known contamination with removal and/or remedial action underway.
6. Areas of known contamination where required response actions have not been taken.
7. Areas that are not evaluated or require further evaluation.

The EBS was conducted in accordance with the Community Environmental Response Facilitation Act (CERFA) (CERFA-Public Law 102-426) protocols and DOD policy regarding contamination assessment. Record searches and reviews were performed on all reasonably available documents from FTMC, ADEM, EPA Region IV, and Calhoun County, as well as a database search of Comprehensive Environmental Response, Compensation, and Liability Act-regulated substances, petroleum products, and Resource Conservation and Recovery Act-regulated facilities. Available historic maps and aerial photographs were reviewed to document historic land uses. Personal and telephone interviews of past and present FTMC employees and military personnel were conducted. In addition, visual site inspections were conducted to verify conditions of specific property parcels.

The Stump Dump consists of one site only. The site was identified as a CERFA site, where petroleum products were stored, released, disposed, and/or migration of hazardous substances is suspected, but are either not evaluated, or require additional evaluation to determine the environmental condition of the site.

The Stump Dump was in use from before 1985 until approximately 1988. The Stump Dump was originally intended to receive storm debris (trees, branches, flood soil). Uncontrolled and unauthorized dumping of items, including construction debris (sheet rock and concrete), batteries, tires, paint cans, refrigerators, landscaping trash, and other materials also occurred at this location. After its closure in 1988 or 1989, the Stump Dump was covered with soil, and vegetation and retention ponds were installed. Surface soil, subsurface soil, groundwater, surface water, sediments, and depositional soils are media of potential concern.

There were not any other investigations identified for the Stump Dump. The Stump Dump is identified as a Category 7 CERFA site: areas that are not evaluated or require further evaluation.

3.0 Site-Specific Data Quality Objectives

3.1 Overview

The data quality objectives (DQO) process is followed to evaluate data requirements and to support the decision-making process associated with the action selection for the Stump Dump. This section incorporates the components of the DQO process described in the 1993 EPA publication EPA 540-R-93-071 *Data Quality Objectives for Superfund* (EPA, 1993). The DQO process as applied to the Stump Dump is described in more detail in Sections 3.2 and 4.3 of the WP. Table 3-1 provides a summary of the factors used to determine the appropriate quantity of samples, and procedures to meet the objectives of the SI, and to establish a basis for future action at this site.

The samples will be analyzed using EPA SW-846 methods, including Update III Methods where applicable, as presented in Chapter 4.0 in this SFSP and Table 6-1 in the QAP. Data will be reported and evaluated in accordance with Corps of Engineers South Atlantic Savannah (CESAS) Level B criteria (USACE, 1994) and the stipulated requirements for the generation of definitive data (Section 3.1.2 of the QAP). Chemical data will be reported via hard copy data packages by the laboratory using Contract Laboratory Program (CLP)-like forms. These packages will be validated in accordance with EPA National Functional Guidelines by Level III criteria.

3.2 Data Users and Available Data

The intended data users and available data related to the SI at the Stump Dump are presented in Table 3-1 and have been used to formulate a site-specific conceptual model. This conceptual model was developed to support the development of this SFSP, which is necessary to meet the objectives of these activities and to establish a basis for future action at the site. The data users for information generated during field activities are primarily the EPA, USACE, ADEM, FTMC, and the USACE supporting contractors. This SFSP, along with the necessary companion documents, has been designed to provide the regulatory agencies with sufficient detail to reach a determination as to the adequacy of the scope of work.

3.3 Conceptual Site Exposure Model

The conceptual site exposure model (CSEM) provides the basis for identifying and evaluating the potential risks to human health in the risk assessment. Graphically presenting possible pathways by which a potential receptor may be exposed, including sources, release and transport pathways, and exposure routes, facilitates consistent and comprehensive evaluation of risk to human health,

**Summary of Data Quality Objectives
Site Investigation, Stump Dump, Parcel 82(7)
Fort McClellan, Calhoun County, Alabama**

Potential Data Users	Available Data	Conceptual Site Model	Media of Concern	Data Uses and Objectives	Data Types	Analytical Level	Data Quantity
EPA ADEM USACE DOD	None	Contaminant Source Fuel and fuel components Waste oils, metals	Surface Soil	SI to confirm or deny the presence of contaminants in the site media and locate source areas, if present.	Surface soil TCL-VOCs TCL-SVOCs TAL-metals CI Pesticides OP Pesticides CI Herbicides	Definitive data in CESAS Level B data packages	8 split-spoon samples from monitoring well installation + QC
IT Corporation Other Contractors Possible future land users		Migration Pathways Infiltration and leaching to groundwater. Venison browsing. Dust emission and volatilization from soil to air. Volatilization from groundwater to air. Infiltration to subsurface soil.	Subsurface Soil Groundwater		Subsurface Soil TCL-VOCs TCL-SVOCs TAL-metals CI Pesticides OP Pesticides CI Herbicides	Definitive data in CESAS Level B data packages	8 split-spoon samples from monitoring well installation + QC
		Potential Receptors Groundskeeper (current) Resident (current and future) Recreational site user (future) Venison consumption	Surface Water Sediments Depositional Soils	Obtain sufficient data to support as appropriate the following: <ul style="list-style-type: none">• Implementing an immediate response.• A no further action.• Proceeding with a RI.	Groundwater TCL-VOCs TCL-SVOCs TAL-metals CI Pesticides OP Pesticides CI Herbicides	Definitive data in CESAS Level B data packages	8 monitoring well samples + QC
		PSSC Fuels Fuel components Waste oils Organics, acids Metals			Surface Water TCL-VOCs TCL-SVOCs TAL-metals TOC Grain size-ASTM D421/D422 CI Pesticides OP Pesticides CI Herbicides	Definitive data in CESAS Level B data packages	6 samples + QC
			Sediments		Sediments TCL-VOCs TCL-SVOCs TAL-metals TOC Grain size-ASTM D421/D422 CI Pesticides OP Pesticides CI Herbicides	Definitive data in CESAS Level B data packages	6 samples + QC
			Depositional Soils		Depositional Soils TCL-VOCs TCL-SVOCs TAL-metals CI Pesticides OP Pesticides CI Herbicides	Definitive data in CESAS Level B data packages	5 hand auger samples + QC

ADEM - Alabama Department of Environmental Management
CESAS - Corps of Engineers, South Atlantic Savannah.

DOD : U.S. Department of Defense
CEAS : Corps of Engineers 300ml Atlantic Savannah
CI - Chlorinated.

DOD - U.S. Department of Defense
EPA - U.S. Environmental Protection Agency
OP - Organophosphonates

PSSC - Potential site-specific chemical.
QC - Quality control.
SVOC - Semivolatile organic compound.
TCL - Target analyte list.
TOC - Total organic carbon.

USACE - U.S. Army Corps of Engineers.
VOC - Volatile organic compound.

and helps to ensure that potential pathways are not overlooked. The elements necessary to construct a complete exposure pathway and develop the CSEM include:

- Source (i.e., contaminated environmental) media
- Contaminant release mechanisms
- Contaminant transport pathways
- Receptors
- Exposure pathways.

Contaminant release mechanisms and transport pathways are not relevant for direct receptor contact with a contaminated source medium.

Potential contamination at the Stump Dump, Parcel 82(7), is due to uncontrolled and unauthorized dumping of items including construction debris, batteries, tires, paint cans, refrigerators, landscaping trash and other materials. After closure of the Stump Dump in 1988 or 1989, it was covered with soil and vegetation and retention ponds were installed. There are no streams on or near the site; however, several borrow pits and leachate/drainage control ponds exist on and around the site. It is assumed that initial release of potential contaminants was restricted to surface soil and/or subsurface soil. Potential contaminant transport pathways include dust emissions and volatilization from soil to ambient air, infiltration to subsurface soil, infiltration and leaching to groundwater, venison browsing, and volatilization from tap water.

Current site use is best described as restricted open space. Surface water at this location is insufficient to support a substantial fish habitat. Plausible receptors under current site usage include the recreational site user and venison consumption scenario.

The construction worker, resident, groundskeeper, and fish consumption scenarios are excluded from current site usage considerations.

As described in the FTMC Comprehensive Reuse Plan, future plans call for this site to become part of Remediation Range 9 which will eventually be conveyed to the U.S. Fish and Wildlife Service for use as a National Wildlife Refuge (FTMC, 1997). The recreational site user and venison consumption scenarios, are the most plausible future receptor scenarios, as well. Other receptors considered but excluded from future scenario consideration include the groundskeeper and construction worker. The future resident receptor scenario is included for conservatism. The construction worker and groundskeeper scenarios are implausible because the site is not expected to be used for industrial purposes.

The contaminant release and transport mechanisms, source and exposure media, receptors and exposure pathways are summarized in Figure 3-1 and Table 3-1.

Assessment of potential ecological risk associated with sites or parcels (e.g., surface water and sediment sampling, specific ecological assessment methods, etc.) will be addressed in a separate document to be issued as the habitat-specific screening ecological risk assessment work plan.

3.4 Decision-Making Process, Data Uses, and Needs

The decision-making process consists of a seven-step process that is presented in detail in Sections 3.2 and 4.3 of the WP and will be followed during the SI at the Stump Dump. Data uses and needs are summarized in Table 3-1.

3.4.1 Risk Evaluation

Confirmation of contamination at the Stump Dump will be based upon a comparison of detected site contaminants to the site-specific screening levels developed in the installation-wide work plan (WP) (IT, 1998b). EPA definitive data with CESAS Level B data packages will be used to achieve detection limits sufficient to determine whether or not the established guidance criteria are exceeded in site media. Definitive data will be adequate for confirming the presence of site contamination and for supporting additional decision-making steps, such as remedial action and risk assessment, if necessary.

3.4.2 Data Types and Quality

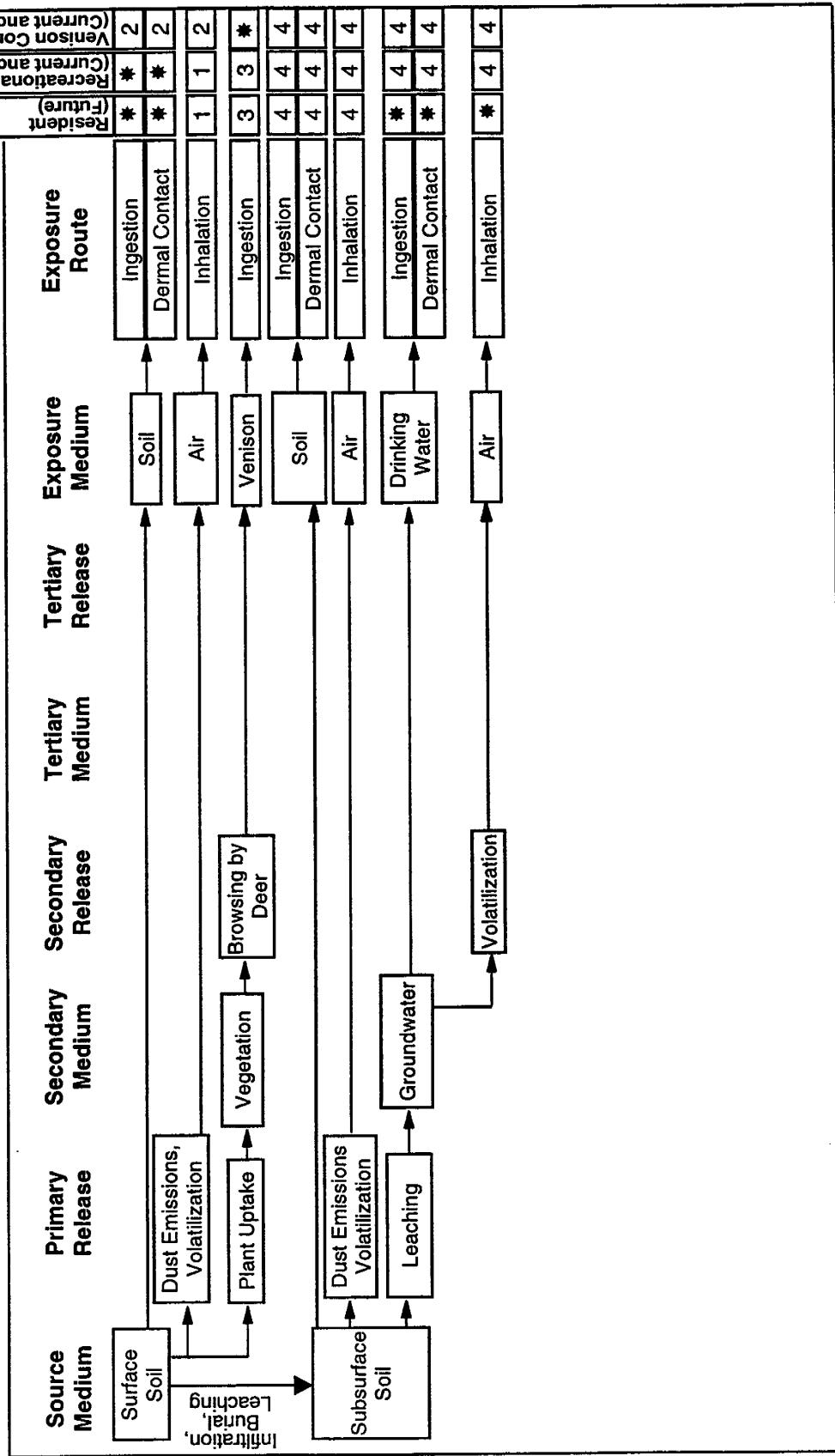
To meet the objectives of the SI at the Stump Dump, it will be necessary to sample and analyze surface and subsurface soils, groundwater, surface water, sediments and depositional soils. As described in Chapter 4.0 of this SFSP, quality assurance/quality control (QA/QC) samples will be collected for all sample types. Samples will be analyzed by EPA-approved SW-846 methods, where available; comply with EPA definitive data requirements; and be reported using hard copy data packages. In addition to meeting the quality needs of this SI, data analyzed at this level of quality are appropriate for all phases of site characterization, remedial investigation, and risk assessment.

3.4.3 Precision, Accuracy, and Completeness

Laboratory requirements of precision, accuracy, and completeness for this SI are provided in Section 9.0 of the QAP.

Figure 3-1

**Human Health Conceptual Site Exposure Model for Stump Dump, Parcel 82(7)
Fort McClellan, Alabama**



* = Complete exposure pathway quantified in SSSL development.

1 = Volatilization from undisturbed surface soil deemed insignificant; soil is likely to be paved or vegetated, reducing dust emissions to insignificant levels; Inhalation pathway not quantified.

2 = This scenario is created to assess indirect (food chain) exposure to surface soil, surface water and sediment.

3 = Evaluated under venison and fish consumption scenario.

4 = Incomplete exposure pathway.

4.0 Field Activities

4.1 UXO Survey Requirements and Utility Clearances

The Stump Dump site falls within the “Possible Explosive Ordnance Impact Area” shown on Plate 10 of the FTMC Archive Search Report, Maps (USACE, 1998a). Therefore, IT will conduct UXO avoidance activities, including surface sweeps and downhole surveys of soil borings in addition to conducting utility clearances before installing soil borings.

4.1.1 Surface UXO Survey

An UXO sweep will be conducted over areas that will be included in the sampling and surveying activities to identify UXO on or near the surface that may present a hazard to on-site workers during field activities. Low-sensitivity magnetometers will be used to locate surface and shallow-buried metal objects. UXO located on the surface will be identified and conspicuously marked for easy avoidance. UXO personnel requirements, procedures, and detailed descriptions of the geophysical equipment to be used are provided in Chapter 4.0 and Appendices D and E of the approved SAP (IT, 1998a).

4.1.2 Downhole UXO Survey

During the soil boring and downhole sampling activities, a downhole UXO survey will be performed to determine if buried metallic objects are present. UXO monitoring, as described in Chapter 4.0 of the SAP (IT, 1998a), will continue until undisturbed soils are encountered or the borehole has been advanced to 12 feet below ground surface, whichever is reached first.

4.1.3 Utility Clearances

After the UXO surface survey has cleared the area to be sampled and prior to performing any intrusive sampling, a utility clearance will be performed at all locations where soil and groundwater samples will be collected, using the procedure outlined in Section 4.2.6 of the SAP. The site manager will mark the proposed locations with stakes, coordinate with the FTMC installation to clear the proposed locations for utilities, and obtain digging permits. Once the locations are approved (for both UXO and utility avoidance) for intrusive sampling, the stakes will be labeled as cleared.

4.2 Environmental Sampling

The environmental sampling program during the SI at the Stump Dump site includes the collection of eight surface soil samples, eight subsurface soil samples, eight groundwater samples, six surface water samples, six sediment samples, and five depositional soil samples for

chemical analyses. These samples will be collected and analyzed to provide data for characterizing the site in order to determine the environmental condition of the site and any further action to be conducted at the site.

4.3 Monitoring Well Installation

Eight residuum monitoring wells will be installed at the Stump Dump to monitor groundwater quality. The residuum monitoring wells will be installed at locations shown on Figure 4-1 and in accordance with the procedures described in the final installation-wide SAP (IT, 1998a). The final location of each residuum monitoring well will be determined by the IT on-site geologist.

4.3.1 Surface Soil Sampling

Surface soil samples will be collected from eight residuum monitoring well boreholes installed at the Stump Dump.

4.3.1.1 Sample Locations and Rationale

Surface soil samples will be collected from residuum monitoring well boreholes installed to determine possible migration pathways for leachate from the site. The surface soil sampling rationale is provided in Table 4-1. Proposed sampling locations are shown on Figure 4-1. Surface soil sample designations, depths, and required QA/QC sample quantities are listed in Table 4-2. The exact surface soil sampling locations will be determined in the field by the on-site geologist based on actual field conditions.

4.3.1.2 Sample Collection Procedures

Surface soil samples will be collected from the upper 1 foot of soil by direct-push technology in accordance with the procedures specified in Section 4.7.1.1 of the SAP. Collected soil samples will be screened using a photoionization detector (PID) in accordance with Section 4.15 of the SAP. Surface soil samples will be screened with the PID for information only; not to select samples to submit for analysis. Sample containers, sample volumes, preservatives and holding times for the analyses required in this SFSP are listed in Chapter 5.0, Table 5-1 of the QAP. Sample documentation and chain of custody (COC) will be recorded as specified in Section 4.13 of the SAP. The samples will be analyzed for the parameters listed in Section 4.5 of this SFSP.

4.3.2 Subsurface Soil Sampling

Subsurface soil samples will be collected from the eight residuum monitoring well soil boreholes installed at the Stump Dump.

Table 4-1

**Site Sampling Rationale
Stump Dump, Parcel 82(7)
Fort McClellan, Calhoun County, Alabama**

(Page 1 of 3)

Sample Location	Media Sampled	Location, Description, and Rationale
FTA-82-MW01	Surface Soil Subsurface Soil	Surface and subsurface soil samples will be collected during the boring of residuum monitoring well FTA-82-MW-01 at the toe of the slope of the Stump Dump. Sampling location represents a possible migration of leachate through the soil or residuum.
FTA-82-MW02	Surface Soil Subsurface Soil	Surface and subsurface soil samples will be collected during the boring of residuum monitoring well FTA-82-MW-02 at the southwestern corner of the Stump Dump. Sampling location represents a possible migration of leachate through the soil or residuum.
FTA-82-MW03	Surface Soil Subsurface Soil	Surface and subsurface soil samples will be collected during the boring of residuum monitoring well FTA-82-MW-03 at the south edge of the Stump Dump. Sampling location represents a possible migration of leachate through the soil or residuum.
FTA-82-MW04	Surface Soil Subsurface Soil	Surface and subsurface soil samples will be collected during the boring of residuum monitoring well FTA-82-MW-04 at the southeast corner of the Stump Dump. Sampling location represents a possible migration of leachate through the soil or residuum.
FTA-82-MW05	Surface Soil Subsurface Soil	Surface and subsurface soil samples will be collected during the boring of residuum monitoring well FTA-82-MW-05 at the east end of the Stump Dump. Sampling location represents a possible migration of leachate through the soil or residuum.
FTA-82-MW06	Surface Soil Subsurface Soil	Surface and subsurface soil samples will be collected during the boring of residuum monitoring well FTA-82-MW-06 at the northernmost point along the perimeter of the Stump Dump. Sampling location represents a possible migration of leachate through the soil or residuum.
FTA-82-MW07	Surface Soil Subsurface Soil	Surface and subsurface soil samples will be collected during the boring of residuum monitoring well FTA-82-MW-07 along the northern perimeter of the Stump Dump. Sampling location represents a possible migration of leachate through the soil or residuum.
FTA-82-MW08	Surface Soil Subsurface Soil	Surface and subsurface soil samples will be collected during the boring of residuum monitoring well FTA-82-MW-08 at the northwest corner of the Stump Dump. Sampling location represents a possible migration of leachate through the soil or residuum.
FTA-82-GW01	Groundwater	Groundwater samples will be collected from residuum monitoring well FTA-82-MW-01 at the toe of the slope of the Stump Dump. Sampling location represents a possible migration of leachate from the site through the residuum groundwater.
FTA-82-GW02	Groundwater	Groundwater samples will be collected from residuum monitoring well FTA-82-MW-02 at the southwestern corner of the Stump Dump. Sampling location represents a possible migration of leachate from the site through the residuum groundwater.
FTA-82-GW03	Groundwater	Groundwater samples will be collected from residuum monitoring well FTA-82-MW-03 at the south edge of the Stump Dump. Sampling location represents a possible migration of leachate from the site through the residuum groundwater.
FTA-82-GW04	Groundwater	Groundwater samples will be collected from residuum monitoring well FTA-82-MW-04 at the southeast corner of the Stump Dump. Sampling location represents a possible migration of leachate from the site through the residuum groundwater.

Table 4-1

Site Sampling Rationale
Stump Dump, Parcel 82(7)
Fort McClellan, Calhoun County, Alabama

(Page 2 of 3)

Sample Location	Media Sampled	Location, Description, and Rationale
FTA-82-GW05	Groundwater	Groundwater samples will be collected from residuum monitoring well FTA-82-MW-05 at the east end of the Stump Dump. Sampling location represents a possible migration of leachate from the site through the residuum groundwater.
FTA-82-GW06	Groundwater	Groundwater samples will be collected from residuum monitoring well FTA-82-MW-06 at the northernmost point along the perimeter of the Stump Dump. Sampling location represents a possible migration of leachate from the site through the residuum groundwater.
FTA-82-GW07	Groundwater	Groundwater samples will be collected from residuum monitoring well FTA-82-MW-07 along the northern perimeter of the Stump Dump. Sampling location represents a possible migration of leachate from the site through the residuum groundwater.
FTA-82-GW08	Groundwater	Groundwater samples will be collected from residuum monitoring well FTA-82-MW-08 at the northwest corner of the Stump Dump. Sampling location represents a possible migration of leachate from the site through the residuum groundwater.
FTA-82-SD01/SW01	Sediment Surface Water	Samples will be retrieved from the retention pond at the toe of the slope of the Stump Dump. Sample location represents a collection point for potential contaminants, that could possibly percolate into the substratum, or deposit dissolved materials after contamination.
FTA-82-SD02/SW02	Sediment Surface Water	Samples will be retrieved from the retention pond at the toe of the slope of the Stump Dump. Sample location represents a collection point for potential contaminants, that could possibly percolate into the substratum, or deposit dissolved materials after contamination.
FTA-82-SD03/SW03	Sediment Surface Water	Samples will be retrieved from the retention pond along the southeast perimeter of the Stump Dump. Sample location represents a collection point for potential contaminants, that could possibly percolate into the substratum, or deposit dissolved materials after contamination.
FTA-82-SD04/SW04	Sediment Surface Water	Samples will be retrieved from the retention ponds at the east end of the Stump Dump. Sample location represents a collection point for potential contaminants, that could possibly percolate into the substratum, or deposit dissolved materials after contamination.
FTA-82-SD05/SW05	Sediment Surface Water	Samples will be retrieved from the large depression at the center of the Stump Dump. Sample location represents a collection point for potential contaminants, that could possibly percolate into the substratum, or deposit dissolved materials after contamination.
FTA-82-SD06/SW06	Sediment Surface Water	Samples will be retrieved from the pond in the north central section of the Stump Dump. Sample location represents a collection point for potential contaminants, that could possibly percolate into the substratum, or deposit dissolved materials after contamination.
FTA-82-DEP01	Depositional Soils	Sample will be retrieved from a seep in the embankment at the toe of the slope of the Stump Dump. Sampling location represents a downgradient exit point for contaminant moving off site.

Table 4-1

**Site Sampling Rationale
Stump Dump, Parcel 82(7)
Fort McClellan, Calhoun County, Alabama**

(Page 3 of 3)

Sample Location	Media Sampled	Location, Description, and Rationale
FTA-82-DEP02	Depositional Soils	Sample will be retrieved from the drainage slough on the south side of the Stump Dump at a lower point on the slough. Sampling location represents a downgradient position where runoff from the southwest half of the site will be integrated as it leaves the site.
FTA-82-DEP03	Depositional Soils	Sample will be retrieved from an upper point on the drainage slough south of the Stump Dump. Sampling location represents a likely point for integration of runoff from the upper (northeast) half of the site.
FTA-82-DEP04	Depositional Soils	Sample will be retrieved from the east slope of the hill, facing away from the site. Sampling location represents a possible background sample, or, will integrate runoff from the northeast corner of the site that overlaps the crest of the hill east of the site.
FTA-82-DEP05	Depositional Soils	Sample will be retrieved from the large depression at the center of the Stump Dump. Sampling location represents a possible deposition of contaminant that could potentially percolate into the substratum, or potentially deposit dissolved materials after evaporation.

NA - Not applicable.

Surface, Subsurface, and Depositional Soil Sample Designations and QA/QC Sample Quantities
Stump Dump, Parcel 82(7)
Fort McClellan, Calhoun County, Alabama

Sample Location	Sample Designation	QA/QC Samples			Analytical Suite
		Sample Depth (ft)	Field Duplicates	MS/MSD	
FTA-82-MW01	FTA-82-MW01-SS-FX0001-REG FTA-82-MW01-DS-FX0002-REG	0-1.0 a			TCL VOCs, TCL SVOCs, Cl. Pesticides, OP Pesticides, Cl Herbicides, TAL Metals
FTA-82-MW02	FTA-82-MW02-SS-FX0003-REG FTA-82-MW02-DS-FX0004-REG	0-1.0 a			TCL VOCs, TCL SVOCs, Cl. Pesticides, OP Pesticides, Cl Herbicides, TAL Metals
FTA-82-MW03	FTA-82-MW03-SS-FX0005-REG FTA-82-MW03-DS-FX0008-REG	0-1.0 a			TCL VOCs, TCL SVOCs, Cl. Pesticides, OP Pesticides, Cl Herbicides, TAL Metals
FTA-82-MW04	FTA-82-MW04-SS-FX0009-REG FTA-82-MW04-DS-FX0010-REG	0-1.0 a			TCL VOCs, TCL SVOCs, Cl. Pesticides, OP Pesticides, Cl Herbicides, TAL Metals
FTA-82-MW05	FTA-82-MW05-SS-FX0011-REG FTA-82-MV05-DS-FX0012-REG	0-1.0 a			TCL VOCs, TCL SVOCs, Cl. Pesticides, OP Pesticides, Cl Herbicides, TAL Metals
FTA-82-MW06	FTA-82-MW06-SS-FX0013-REG FTA-82-MW06-DS-FX0014-REG	0-1.0 a			TCL VOCs, TCL SVOCs, Cl. Pesticides, OP Pesticides, Cl Herbicides, TAL Metals
FTA-82-MW07	FTA-82-MW07-SS-FX0015-REG FTA-82-MW07-DS-FX0018-REG	0-1.0 a			FTA-82-MW06-DS-FX0014-MS FTA-82-MW06-DS-FX0014-MSD
FTA-82-MW08	FTA-82-MW08-SS-FX0019-REG FTA-82-MW08-DS-FX0020-REG	0-1.0 a			TCL VOCs, TCL SVOCs, Cl. Pesticides, OP Pesticides, Cl Herbicides, TAL Metals
FTA-82-DEP01	FTA-82-DEP01-DEP-FX0021-REG	0-1.0			TCL VOCs, TCL SVOCs, Cl. Pesticides, OP Pesticides, Cl Herbicides, TAL Metals
FTA-82-DEP02	FTA-82-DEP02-DEP-FX0022-REG	0-1.0			TCL VOCs, TCL SVOCs, Cl. Pesticides, OP Pesticides, Cl Herbicides, TAL Metals
FTA-82-DEP03	FTA-82-DEP03-DEP-FX0023-REG	0-1.0			TCL VOCs, TCL SVOCs, Cl. Pesticides, OP Pesticides, Cl Herbicides, TAL Metals
FTA-82-DEP04	FTA-82-DEP04-DEP-FX0024-REG	0-1.0			TCL VOCs, TCL SVOCs, Cl. Pesticides, OP Pesticides, Cl Herbicides, TAL Metals
FTA-82-DEP05	FTA-82-DEP05-DEP-FX0025-REG	0-1.0			TCL VOCs, TCL SVOCs, Cl. Pesticides, OP Pesticides, Cl Herbicides, TAL Metals

^a Actual sample depth selected for analysis will be at the discretion of the onsite geologist and will be based on field observation.

Cl - Chlorinated.

MS/MSD - Matrix spike/matrix spike duplicate.

OP - Organophosphorus.

QA/QC - Quality assurance/quality control.

SVOC - Semivolatile organic compound.

TAL - Target analyte list.

TCL - Target compound list.

VOC - Volatile organic compound.

Table 4-2

Surface, Subsurface, and Depositional Soil Sample Designations and QA/QC Sample Quantities
Stump Dump, Parcel 82(7)
Fort McClellan, Calhoun County, Alabama

(Page 2 of 2)

- MS/MSD - Matrix spike/matrix spike duplicate.
OP - Organophosphorus.
QA/QC - Quality assurance/quality control.
SVOC - Semivolatile organic compound.
TAL - Target analyte list.
TCL - Target compound list.
VOC - Volatile organic compound.

4.3.2.1 Sample Locations and Rationale

Subsurface soil samples will be collected from the soil borings proposed on Figure 4-1. The subsurface soil sampling rationale is presented in Table 4-1. Subsurface soil sample designations, depths, and required QA/QC sample quantities are listed in Table 4-2. The exact soil boring sampling locations will be determined in the field by the on-site geologist based on actual field observations.

4.3.2.2 Sample Collection Procedures

Subsurface soil samples will be collected from soil borings at a depth greater than 1-foot bgs in the unsaturated zone. The soil borings will be advanced and soils samples collected using the procedures specified in Section 4.7.1.1 of the SAP.

Soil samples will be collected continuously for the first 12 feet. Split-spoon samples will be collected at 5-foot intervals from 12 feet bgs to the bottom of the borehole. A detailed lithological log will be recorded by the on-site geologist for each borehole. At least one subsurface sample from each borehole will be selected for analyses. The collected subsurface soil samples will be field-screened using a photoionization detector (PID) in accordance with Section 4.15 of the SAP to measure samples exhibiting elevated readings above background (readings in ambient air). Typically, the subsurface soil sample showing the highest readings above background using the PID will be sampled and submitted to the laboratory for analysis. If none of the sample intervals collected indicate elevated readings on the PID, the deepest interval collected will be submitted for laboratory analyses. Subsurface soil samples will be selected for analyses from any depth interval if the on-site geologist suspects PSSC at the interval. Site conditions such as lithology may also determine the actual sample depth interval submitted for analyses. More than one subsurface soil sample will be collected if field measurements and observations indicate a possible layer of PSSC and/or additional sample data would provide insight to the existence of any PSSC.

Sample documentation and COC will be recorded as specified in Section 4.13 of the SAP.

Sample containers, sample volumes, preservatives and holding times for the analyses required in this SFSP are listed in Chapter 5.0, Table 5-1 of the QAP. The samples will be analyzed for the parameters listed in Section 4.5 of this SFSP.

4.3.3 Groundwater Sampling

Groundwater samples will be collected from eight residuum monitoring wells installed at the Stump Dump.

4.3.3.1 Sample Locations and Rationale

Groundwater samples will be collected from permanent residuum monitoring wells installed during the SI. Residuum monitoring wells will be placed at locations representing potential migration pathways for leachate to exit the site through residuum groundwater. Groundwater samples will be collected from the locations shown on Figure 4-1. The groundwater sampling rationale is listed in Table 4-1. The groundwater sample designations, depths, and required QA/QC sample quantities are listed in Table 4-3. The exact sampling locations will be determined in the field by the on-site geologist based on actual field conditions.

4.3.3.2 Sample Collection Procedures

Groundwater samples will be collected in accordance with the procedures and methods specified in Section 4.7.1.1 of the SAP.

Sample documentation and COC will be recorded as specified in Section 4.13 of the SAP.

Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in Chapter 5.0, Table 5-1 of the QAP. The samples will be analyzed for the parameters listed in Section 4.5 of this SFSP.

4.3.4 Surface Water Sampling

Six surface water samples will be collected from surface water sources located at or near the Stump Dump.

4.3.4.1 Sample Locations and Rationale

The surface water sampling rationale is listed in Table 4-1. Surface water samples will be collected from the locations proposed on Figure 4-1. The surface water sample designations and required QA/QC sample requirements are listed in Table 4-4. The exact sampling locations will be determined in the field by the ecological sampler, based on drainage pathways and actual field observations.

Table 4-3

Groundwater Sample Designations and QA/QC Sample Quantities
Stump Dump, Parcel 82(7)
Fort McClellan, Calhoun County, Alabama

Sample Location	Sample Designation	Sample Depth (ft)	QA/QC Samples			Analytical Suite
			Field Duplicates	Field Splits	MS/MSD	
FTA-82-MW01	FTA-82-MW01-GW-FX3001-REG	N/A				TCL VOCs, TCL SVOCs, Cl Pesticides, OP Pesticides, Total TAL Metals
FTA-82-MW02	FTA-82-MW02-GW-FX3002-REG	N/A				TCL VOCs, TCL SVOCs, Cl Pesticides, OP Pesticides, Total TAL Metals
FTA-82-MW03	FTA-82-MW03-GW-FX3003-REG	N/A	FTA-82-MW03-GW-FX3004-FD	FTA-82-MW03-GW-FX3005-FS		TCL VOCs, TCL SVOCs, Cl Pesticides, OP Pesticides, Total TAL Metals
FTA-82-MW04	FTA-82-MW04-GW-FX3006-REG	N/A				TCL VOCs, TCL SVOCs, Cl Pesticides, OP Pesticides, Total TAL Metals
FTA-82-MW05	FTA-82-MW05-GW-FX3007-REG	N/A				TCL VOCs, TCL SVOCs, Cl Pesticides, OP Pesticides, Total TAL Metals
FTA-82-MW06	FTA-82-MW06-GW-FX3008-REG	N/A				TCL VOCs, TCL SVOCs, Cl Pesticides, OP Pesticides, Total TAL Metals
FTA-82-MW07	FTA-82-MW07-GW-FX3009-REG	N/A				TCL VOCs, TCL SVOCs, Cl Pesticides, OP Pesticides, Total TAL Metals
FTA-82-MW08	FTA-82-MW08-GW-FX3010-REG	N/A				TCL VOCs, TCL SVOCs, Cl Pesticides, OP Pesticides, Total TAL Metals

Cl - Chlorinated.

MS/MSD - Matrix spike/matrix spike duplicate.

OP - Organophosphorus.

QA/QC - Quality assurance/quality control.

SVOC - Semivolatile organic compound.

TAL - Target analyte list.

TCL - Target compound list.

VOC - Volatile organic compound.

Table 4-4

Surface Water and Sediment Sample Designations and QA/QC Sample Quantities
Stump Dump, Parcel 827)
Fort McClellan, Calhoun County, Alabama

Sample Location	Sample Designation	QA/QC Samples			Analytical Suite
		Field Duplicates	Field Spikes	MS/MSD	
FTA-148-SW/SD01	FTA-148-SW/SD01-SW-DB2001-REG	NA			TCL VOCs, TCL SVOCs, Cl Pesticides, OP Pesticides, Cl Herbicides, Total TAL Metals w/TOC, Grain Size (for Sediment only)
	FTA-148-SW/SD01-SD-DB1001-REG	0 - 0.5	FTA-148-SW/SD01-SD-DB1002-FD	FTA-148-SW/SD01-SD-DB1003-FS	TCL VOCs, TCL SVOCs, Cl Pesticides, OP Pesticides, Cl Herbicides, Total TAL Metals w/TOC, Grain Size (for Sediment only)
FTA-148-SW/SD02	FTA-148-SW/SD02-SW-DB2002-REG	NA			TCL VOCs, TCL SVOCs, Cl Pesticides, OP Pesticides, Cl Herbicides, Total TAL Metals w/TOC, Grain Size (for Sediment only)
	FTA-148-SW/SD02-SD-DB1004-REG	0 - 0.5			TCL VOCs, TCL SVOCs, Cl Pesticides, OP Pesticides, Cl Herbicides, Total TAL Metals w/TOC, Grain Size (for Sediment only)
FTA-148-SW/SD03	FTA-148-SW/SD03-SW-DB2003-REG	NA			TCL VOCs, TCL SVOCs, Cl Pesticides, OP Pesticides, Cl Herbicides, Total TAL Metals w/TOC, Grain Size (for Sediment only)
	FTA-148-SW/SD03-SD-DB1005-REG	0 - 0.5			TCL VOCs, TCL SVOCs, Cl Pesticides, OP Pesticides, Cl Herbicides, Total TAL Metals w/TOC, Grain Size (for Sediment only)
FTA-148-SW/SD04	FTA-148-SW/SD04-SW-DB2004-REG	NA			TCL VOCs, TCL SVOCs, Cl Pesticides, OP Pesticides, Cl Herbicides, Total TAL Metals w/TOC, Grain Size (for Sediment only)
	FTA-148-SW/SD04-SD-DB1006-REG	0 - 0.5			TCL VOCs, TCL SVOCs, Cl Pesticides, OP Pesticides, Cl Herbicides, Total TAL Metals w/TOC, Grain Size (for Sediment only)
FTA-148-SW/SD05	FTA-148-SW/SD05-SW-DB2005-REG	NA			TCL VOCs, TCL SVOCs, Cl Pesticides, OP Pesticides, Cl Herbicides, Total TAL Metals w/TOC, Grain Size (for Sediment only)
	FTA-148-SW/SD05-SD-DB1007-REG	0 - 0.5			TCL VOCs, TCL SVOCs, Cl Pesticides, OP Pesticides, Cl Herbicides, Total TAL Metals w/TOC, Grain Size (for Sediment only)
FTA-148-SW/SD06	FTA-148-SW/SD06-SW-DB2006-REG	NA			TCL VOCs, TCL SVOCs, Cl Pesticides, OP Pesticides, Cl Herbicides, Total TAL Metals w/TOC, Grain Size (for Sediment only)
	FTA-148-SW/SD06-SD-DB1008-REG	0 - 0.5			TCL VOCs, TCL SVOCs, Cl Pesticides, OP Pesticides, Cl Herbicides, Total TAL Metals w/TOC, Grain Size (for Sediment only)

Cl - Chlorinated.
 MS/MSD - Matrix spike/matrix spike duplicate.
 OP - Organophosphorus.
 QA/QC - Quality assurance/quality control.
 SVOC - Semivolatile organic compound.
 TAL - Target analyte list.
 TCL - Target compound list.
 TOC - Total organic carbon.
 VOC - Volatile organic compound.

4.3.4.2 Sample Collection Procedures

Surface water samples will be collected in accordance with the procedures specified in Section 4.9.1.3 of the SAP. Sample documentation and COC will be recorded as specified in Section 4.13 of the SAP. Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in Chapter 5.0, Table 5-1, of the QAP. The samples will be analyzed for the parameters listed in Section 4.5.

4.3.5 Sediment Sampling

Six sediment samples will be collected at the Stump Dump. These sediment samples will be collected at the same locations as the surface water samples described in Section 4.3.4.

4.3.5.1 Sample Locations and Rationale

The tentative locations for the six sediment samples are shown in Figure 4-1. Sediment sampling rationale is presented in Table 4-1. Sediment sample designations and required QA/QC sample requirements are listed in Table 4-4. The actual sediment sample points will be at the discretion of the ecological sampler, based on the drainage pathways and actual field observations.

4.3.5.2 Sample Collection Procedures

Sediment samples will be collected in accordance with the procedures specified in Section 4.9.1.2 of the SAP. Sample documentation and COC will be recorded as specified in Section 4.13 of the SAP. The sediment samples will be analyzed for the parameters listed in Section 4.5.

4.3.6 Depositional Soil Sampling

Five depositional soil samples will be collected at the Stump Dump site.

4.3.6.1 Sample Locations and Rationale

The depositional soil samples will be collected at seeps in the embankment at the toe of the site, a drainage slough on the southside of site, the upper point of the drainage slough, east slope of hill facing away from site, and at a large depression in the center of the site. Sample locations represent areas where runoff could potentially exit the site, or where contaminant could collect and percolate to the subsurface. The sampling rationale is listed in Table 4-1 and the proposed sampling location is shown on Figure 4-1. The depositional soil sample designation, depth, and required QA/QC sample quantities are listed in Table 4-2. The actual depositional soil sample point will be at the discretion of the ecological sampler, based on the physical characteristics of the drainage area and actual field observations.

4.3.6.2 Sample Collection Procedures

Depositional soil sample collection will be conducted in accordance with the procedures for surface soil sample collection specified in Section 4.9.1.1 of the SAP. Sample documentation and COC will be recorded as specified in Section 4.13 of the SAP. Sample containers, sample volumes, preservatives and holding times for the analyses required in this SFSP are listed in Chapter 5.0, Table 5-1 of the QAP. The samples will be analyzed for the parameters listed in Section 4.5.

4.4 Decontamination Requirements

Decontamination will be performed on sampling and nonsampling equipment to prevent cross-contamination between sampling locations. Decontamination of sampling equipment will be performed in accordance with the requirements presented in Section 4.10.1.1 of the SAP.

Decontamination of nonsampling equipment will be performed in accordance with the requirements presented in Section 4.10.1.2 of the SAP.

4.5 Surveying of Sample Locations

Sampling locations will be marked with pin flags, stakes, and/or flagging, and will be surveyed using either global positioning system (GPS) or conventional civil survey techniques, as necessary to obtain the required level of accuracy. Horizontal coordinates will be referenced to the Alabama State Plane Coordinate System, 1983 North American Datum (NAD83). Elevations will be referenced to the National Geodetic Vertical Datum of 1929 or the North American Vertical Datum of 1988 (soon to be established on site).

Horizontal coordinates for soil, sediment, and surface water locations will be recorded using a GPS to provide accuracy within 1 meter. Because of a need to determine water levels, a higher level of accuracy is required for groundwater sample locations. Previous wells surveyed to an accuracy of 0.1 foot for horizontal coordinates and 0.01 foot for elevations, using survey-grade GPS techniques and/or conventional civil survey techniques, as required.

Procedures to be used for GPS surveying are described in Section 4.3 of the SAP. Conventional land survey requirements are presented in Section 4.19 of the SAP.

4.6 Analytical Program

Samples collected at the locations specified in this chapter of this SFSP will be analyzed for the specific suites of chemicals and elements based on the history of site usage, as well as EPA,

ADEM, FTMC, and USACE requirements. Target analyses for samples collected from the Stump Dump site consist of the following analytical suite:

- Target compound list (TCL) volatile organic compounds - Method 8260B
- TCL semivolatile organic compounds – Method 8270C
- Target analyte list (TAL) Metals – Method 6010B/7000
- Chlorinated herbicides – Method 8151A
- Chlorinated pesticides – Method 8081A
- Organophosphorus herbicides – Method 8141A

In addition, the sediment samples will be analyzed for the following list of parameters:

- Total organic carbon – Method 9060 (sediment only)
- Grain size –American Society for Testing and Materials D421/D422 (sediment only).

The samples will be analyzed using EPA SW-846 methods, including Update III Methods where applicable, as presented in Table 4-5 of this SFSP and Table 6-1 in the QAP. Data will be reported and evaluated in accordance with CESAS Level B criteria (USACE, 1994) and the stipulated requirements for the generation of definitive data (Section 3.1.2 of the QAP). Chemical data will be reported by the laboratory via hard copy data packages using CLP-like forms. These packages will be validated in accordance with EPA National Functional Guidelines by Level III criteria.

4.7 Sample Preservation, Packaging, and Shipping

Sample preservation, packaging, and shipping will follow the procedures as specified in Section 4.13.2 of the SAP. Completed analysis request/COC records will be secured and included with each shipment of coolers to:

Sample Receiving
Quanterra Environmental Services
5815 Middlebrook Pike
Knoxville, Tennessee 37921
Telephone: (423) 588-6401.

Table 4-5

Analytical Samples
Stump Dump, Parcel 82(7)
Fort McClellan, Calhoun County, Alabama

Parameters	Analysis Method	Sample Matrix	TAT Needed	Field Samples*			QA/QC Samples*				Quanterra Total No. Analysis	QA Lab Total No. Analysis
				No. of Sample Points	No. of Events	No. of Field Samples	Field Dups (10%)	Spills w/ QA Lab (5%)	MSMSD (5%)	Trip Blank (1/ship)		
Stump Dump - Parcel 82(7): 14 water matrix: 8 groundwater, 6 surface water; 27 soil matrix: 8 surface soil, 8 subsurface, 6 sediment, and 5 depositional soil												
TCL VOCs	8260B	water	normal	14	1	14	1	1	1	4	1	22
TCL SVOCs	8270C	water	normal	14	1	14	1	1	1	1	1	18
C1 Pesticides	8081A	water	normal	14	1	14	1	1	1	1	1	18
OP Pesticides	8141A	water	normal	14	1	14	1	1	1	1	1	18
C1 Herbicides	8150A	water	normal	14	1	14	1	1	1	1	1	18
Tot TAL Metals	6010B/7000	water	normal	14	1	14	1	1	1	1	1	18
TCL VOCs	8260B	soil	normal	27	1	27	3	3	3	1	1	35
TCL SVOCs	8270C	soil	normal	27	1	27	3	3	3	1	1	35
C1 Pesticides	8081A	soil	normal	27	1	27	3	3	3	1	1	35
OP Pesticides	8141A	soil	normal	27	1	27	3	3	3	1	1	35
C1 Herbicides	8150A	soil	normal	27	1	27	3	3	3	1	1	35
Tot TAL Metals	6010B/7000	soil	normal	27	1	27	3	3	3	1	1	35
Former Stump Dump Total:				246			24	24	12	4	12	322
												24

*For TCL VOC analyses in soil, the total number of samples is calculated based on the SW-846 Update III requirements for collection and individual analysis of three aliquots of soil for each sample collected. QA/QC sample totals also reflect this requirement. The incremental cost of \$8 per sample for the Encore soil sampler is added to the base analytical cost of \$143 per volatile sample for a total analytical cost of \$151 per sample.

Field duplicate, QA, spill, and MSMSD samples were calculated as a percentage of the field samples collected per site and were rounded up to the nearest whole number. Trip blank samples will be collected in association with water matrix samples for VOC analysis only. Assumed 4 field samples per day to estimate trip blanks. Equipment blanks will be collected once per event whenever sampling equipment is field decontaminated and re-used. They will be repeated weekly for sampling events that are anticipated to last more than 1 week. Assumed 20 field samples will be collected per week to estimate number of equipment blanks.

Analytical unit costs are based on reporting a Level III harcopy data package and IT format electronic data deliverable. Rush turnaround charges were not applied.

Analytical totals are calculated by multiplying the unit cost by the sum of the field samples, field duplicates, trip blanks, and equipment rinse blanks. No costs were added for QA spills and MSMSDs.

Ship samples to:

Quantera Environmental Services
5815 Middlebrook Pike
Knoxville, Tennessee 37921
Attn: John Reynolds
Tel: 423-588-6401
Fax: 423-594-4315

USACE Laboratory split samples
are shipped to:

USACE South Atlantic Division Laboratory
Attn: Sample Receiving
611 South Cobb Drive
Marietta, Georgia 30060-3112
Tel: 770-919-5270

MSMSD - Matrix spike/matrix spike duplicate.
QAQC - Quality assurance/quality control.

SVOC - Semivolatile organic compound.

TAL - Target analyte list.

TCL - Target compound list.

VOC - Volatile organic compound.

TOC - Total organic carbon

Split samples collected for the USACE Laboratory will be shipped to the following address:

USACE South Atlantic Division Laboratory
Attn: Sample Receiving
611 South Cobb Drive
Marietta, Georgia 30060
Telephone: (770) 919-5270

4.8 Investigation-Derived Waste Management

Management and disposal of the investigation-derived wastes (IDW) will follow procedures and requirements as described in Appendix D of the SAP. The IDW expected to be generated at the Stump Dump will include decontamination fluids and disposable personal protective equipment. The IDW will be staged inside the fenced area surrounding Buildings 335 and 336 while awaiting final disposal.

4.9 Site-Specific Safety and Health

Safety and health requirements for this SI are provided in the SSHP attachment for the Stump Dump, Parcel 82(7). The SSHP attachment will be used in conjunction with the SHP.

5.0 Project Schedule

The project schedule for the site investigation activities will be provided by the IT project manager to the BRAC Closure Team on a monthly basis.

6.0 References

Environmental Science and Engineering Inc. (ESE), 1998, *Final Environmental Baseline Survey, Fort McClellan, Alabama*, prepared for U.S. Army Environmental Center, Aberdeen Proving Ground, Maryland, January.

Fort McClellan (FTMC), 1997, *Fort McClellan Comprehensive Reuse Plan*, prepared under contract to the Calhoun County Commission, November.

IT Corporation (IT), 1998a, *Final Installation-Wide Sampling and Analysis Plan, Fort McClellan, Calhoun County, Alabama*, August.

IT Corporation (IT), 1998b, *Final Installation-Wide Work Plan, Fort McClellan, Calhoun County, Alabama*, August.

U.S. Army Corps of Engineers (USACE), 1998a, *Archives Search Report, Maps, Fort McClellan, Anniston, Alabama*, June.

U.S. Army Corps of Engineers (USACE), 1998b, *Statement of Work for Task Order CK005, Site Investigations, Fort McClellan, Alabama, Scope of Work*, January.

U.S. Army Corps of Engineers (USACE), 1994, *Requirements for the Preparation of Sampling and Analysis Plans*, Engineer Manual EM 200-1-3, September 1.

U.S. Department of Agriculture (USDA), 1961, *Soil Survey, Calhoun County, Alabama*, Soil Conservation Service, Series 1958, No. 9, September.

U.S. Environmental Protection Agency (EPA), 1993, *Data Quality Objectives Process for Superfund, Interim Final Guidance*, EPA 540-R-93-071, September.